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REMARKS

By the present Amendment, various revisions have been made throughout the specification. In addition, claim 1 has been amended to define one aspect of the present invention with greater precision and to include the subject matter of claim 2. In addition, claims 1, 5 and 7 have been amended to define the "oil droplets" more clearly and consistent with the description provided in the paragraph bridging pages 32 and 33 of the specification. Applicants respectfully submit that the claims now of record fully meet the rejection under the second paragraph of 35 U.S.C. §112, set forth in the Action and define the various aspects of the present invention in a manner which is patentable over the cited prior art.

As set forth in amended claim 1, one aspect of the present invention relates to a process for producing polymer fine particles comprising dispersing a solution obtained by dissolving a hydrophobic polymer in a solvent immiscible with water in an aqueous phase comprising fine particles of an oxide or hydroxide of at least one element selected from the group consisting of elements belonging to certain groups in the periodic table using a surfactant so as to provide oil droplets containing the solvent immiscible with water and the hydrophobic polymer, and then removing the solvent from the oil droplets to form polymer fine particles dispersed in water. The hydrophobic polymer has the structural unit represented by formula (I) which includes an organic silicon group. Other aspects of the invention, such as defined in independent claims 5 and 7 (which relate to a lithographic printing plate precursor) also include a recitation of polymer fine particles which are

obtained, *inter alia*, from a solution which includes a hydrophobic polymer that has a structural unit represented by formula (I).

Vrancken, U.S. Patent No. 3,476,937, does not disclose or suggest the process or precursor as defined in the claims of record. Vrancken describes a thermographic recording method employing a recording material comprising a uniform layer of discrete hydrophobic thermoplastic polymer particles. As set forth in the passage beginning at column 5, line 1, the hydrophobic thermoplastic polymers can be applied as an aqueous dispersion which occasionally contains a hydrophilic binding agent. The aqueous dispersions can be prepared by dispersing a solution of a non-water-soluble polymer in a water-immiscible solvent in an aqueous solution of a hydrophilic binding agent which can contain a surfactant. In the description provided for Example 9 in column 16, an illustrative composition A is dispersed in composition B, the dispersion is heated and stirred until the methylene chloride that was originally present in composition A is evaporated completely.

As should be evident to those of ordinary skill in the art, Vrancken does not describe a process in which a hydrophobic polymer is dissolved in a solvent immiscible with water which is dispersed in an aqueous phase comprising fine particles of an oxide or hydroxide of at least one element selected from the group consisting of elements belonging to the listed groups in the periodic table. Furthermore, the patent does not in any way teach that the hydrophobic polymer has the structural unit represented by formula (I). In fact, of the hydrophobic thermoplastic polymers disclosed in the paragraph beginning at column 4, line 35, none contain any type of organic silicon group, much less the specific

structural unit defined in each and every one of the claims of record. Therefore, Vrancken falls far short from being sufficient to support a rejection of any of the claims now of record.

In an effort to meet this latter deficiency of Vrancken, the Examiner has further relied on Perez et al, U.S. Patent No. 6,323,251. As the Examiner has noted, Perez et al does not in any way relate to lithographic printing plate precursors or, for that matter, the subject matter of Vrancken. Instead, Perez et al relates to thermoplastic/thermoset hybrid foams wherein the thermoset forms a discontinuous phase in a continuous thermoplastic phase. The thermoplastic polymer which can form the continuous phase includes polyesters, polycarbonates, polyurethanes, polysiloxanes, polyacrylates, polyarylates, polyvinyls, polyethers, polyolefins, polyamides, fluoropolymers, cellulosics, and combinations and composites thereof. Preferred polymers include polyesters, polyamides, polyurethanes and polyolefins (see column 8, lines 34-41).

Absent improper reliance on applicants' own specification, those of ordinary skill in the art would not attempt to combine the distinct subject matters of Vrancken and Perez et al. Moreover, even if a proper basis for combining the distinct patents existed, one would certainly not arrive at the subject matter defined in the claims of record. More specifically, those of ordinary skill in the art would not turn to the foam art in order to modify the discrete hydrophobic thermoplastic polymer particles present in the recording material of Vrancken. In this regard, it is noted that in Vrancken the hydrophobic thermoplastic polymer particles result from the dispersed phase whereas in Perez et al, the thermoplastic materials constitute the continuous phase. Furthermore, there is absolutely nothing which

would lead those of ordinary skill in the art to selecting polysiloxane from the lengthy list of polymers identified in column 8 of Perez et al, particularly since polysiloxanes are not included within the preferred thermoplastics specifically identified in the patent. Even if one could overcome all of these noted reasons as to why the hypothetical combination is not proper, the mere reference to polysiloxanes would not necessarily lead to the structural unit defined by formula (I) as set forth in each and every claim now of record. To illustrate this last point, provided herewith are excerpts from the Condensed Chemical Dictionary relating to the term "polysiloxane" which refers to the entry "siloxane" that illustrates a polymer structure that clearly does not meet formula (I) as defined in the claims. Thus, it is without doubt that the claims of record are patentable over the combination of Vrancken and Perez et al.

As to the rejection of claim 1 based on Tyagi et al, U.S. Patent No. 6,294,595, it has previously been noted that the subject matter of claim 2 has been incorporated into claim 1 and therefore the rejection based on Tyagi et al is believed to be rendered moot.

For all of the reasons set forth above, applicants respectfully submit that the claims now of record clearly and distinctly define the various aspects of the invention in a manner which is patentable over the cited prior art. Accordingly, reconsideration and allowance of the present application are requested.

As a final matter, it is noted that applicants submitted an Information Disclosure Statement on October 7, 2003 and applicants request consideration of the enclosed

information and return of the acknowledged citation form with the next Official Action.¹

Should the Examiner wish to discuss any aspect of the present application, she is invited to contact the undersigned attorney at the number provided below.

Respectfully submitted,

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¹ The certified copies of the priority documents are being concurrently submitted herewith and applicants also request acknowledgment of receipt of such documents.

Hawley's
Condensed Chemical
Dictionary

TWELFTH EDITION

Revised by
Richard J. Lewis, Sr.



VAN NOSTRAND REINHOLD COMPANY
New York

troleum processing equipment, wetting and emulsifying agents, inhibiting hydrogen chloride.

"Polyram" [FMC]. TM for a wettable powder. Hazard: Toxic by ingestion and inhalation. Use: Fungicide approved for many vegetables.

polyrotaxanes. Hoop-like molecules threaded as "rotors" on a linear polymer "axle." Up to 40 α -cyclodextrin (rotor) molecules have been threaded on a poly(iminooligomethylene) (hub) chain.

polysaccharide. A combination of nine or more monosaccharides, linked together by glycosidic bonds. Examples: starch, cellulose, glycogen. See also carbohydrate, phycocolloid.

polysiloxane. See siloxane.

"Poly-Solv" [Olin]. TM for a series of glycol ether solvents for paints, varnishes, dry-cleaning soaps, cutting oils, insecticides.

polysorbate. (USAN name for a polyoxyethylene fatty acid ester). One of a group of nonionic surfactants obtained by esterification of sorbitol with one or three molecules of a fatty acid (stearic, lauric, oleic, palmitic) under conditions which cause splitting out of water from the sorbitol, leaving sorbitan. About 20 moles of ethylene oxide per mole of sorbitol are used in the condensation to effect water solution. Properties: Lemon to amber, oily liquids; d 1.1; faint odor and bitter taste; most types are soluble in water, alcohol, and ethyl acetate. Combustible.

Grade: Polysorbate 20 (polyoxyethylene (20) sorbitan monolaurate). Polysorbate 60 (polyoxyethylene (20) sorbitan monostearate). Polysorbate 80 (polyoxyethylene (20) sorbitan monooleate). Polysorbate 65 (polyoxyethylene (20) sorbitan tristearate).

Use: Surfactant, emulsifying agent, dispersing agents, shortenings and baked goods, pharmaceuticals, flavoring agents, foaming and defoaming agents.

See also sorbitan fatty acid ester.

polystyrene. CAS: 9003-53-6. $(C_6H_5CHCH_2)_n$. Polymerized styrene, a thermoplastic synthetic resin of variable molecular weight depending on degree of polymerization.

Properties: Transparent, hard solid; high strength and impact resistance; excellent electrical and thermal insulator. Attacked by hydrocarbon solvents but resists organic acids, alkalies, and alcohols. Not recommended for outdoor use, as unmodified polymer yellows when exposed to light, but light-stable modified

grades are available. Easily colored, molded, and fabricated. Copolymerization with butadiene and acrylonitrile and blending with rubber or glass fiber increase impact strength and heat resistance; autoign temp 800F. Combustible.

Derivation: Polymerization of styrene by free radicals with peroxide initiator.

Forms: Sheet, plates, rods, rigid foam, expandable beads or spheres.

Hazard: As for foam, plastic.

Use: Packaging, refrigerator doors, air conditioner cases, containers and molded household wares, machine housings, electrical equipment, toys, clock and radio cabinets. (As foam): thermal insulations, light construction as in boats, etc., ice buckets, water coolers, fillers in shipping containers, furniture construction. (As spheres): radiator leak stopper.

See also "Styron", "Styrofoam."

polysulfide elastomer. A synthetic polymer in either solid or liquid form obtained by the reaction of sodium polysulfide with organic dichlorides such as dichlorodiethyl formal, alone or mixed with ethylene dichloride. Outstanding for resistance to oils and solvents and for impermeability to gases. They have poor tensile strength and abrasion resistance, but are resilient and have excellent low-temperature flexibility. Some grades have fairly strong odor, which is not objectionable in most applications. Sealant grades are furnished in two parts, which cure at room temperature when blended.

Use: Gasoline and oil-loading hose, sealants and adhesive compositions, binder in solid rocket propellants, gaskets, paint spray hose.

See also "Thiokol."

polysulfone. A synthetic thermoplastic polymer. Properties: Hard, rigid, transparent solid. Tensile strength 10,000 psi, d 1.24, flexural strength 15,000 psi, good electrical resistance, minimum creep, low expansion coefficient. Soluble in aromatic hydrocarbons, ketones, and chlorinated hydrocarbons; resistant to corrosive acids and alkalies, to heat and oxidation and to detergents, oils, and alcohols. Dimensionally stable over temperature range -100 to +148C; tends to absorb moisture, readily processed and fabricated. Combustible, but self-extinguishing.

Derivation: Condensation of bisphenol A and dichlorophenyl sulfone.

Use: Power-tool housings, electrical equipment, extruded pipe and sheet, auto components, electronic parts, appliances, computer components, base matrix for stereotypic printing plates.

polyterpene resin. A class of thermoplastic resins or viscous liquids of amber color, obtained by polymerization of turpentine in the presence of catalysts such as aluminum chloride or mineral

minum, zinc, lead, and tin; soluble in hydrogen fluoride.

Derivation: Reaction of powdered silicon and nitrogen in an electric furnace at 1300C.

Use: Refractory coatings, bonding silicon carbide, mortars, abrasives, thermocouple tubes in molten aluminum, crucibles for zone-refining germanium, rocket nozzles, high-strength fibers and whiskers, insulator and passivating agent in transistors and other solid-state devices.

silicon tetrabromide. (tetrabromosilane).

CAS: 7789-66-4. SiBr_4 .

Properties: Fuming, colorless liquid which turns yellow in air; disagreeable odor. Decomposed by water with evolution of heat, d 2.82 (0C), bp 153C, mp 5C. Non-combustible. Purity: 99.999%.

Hazard: Strong irritant to tissue.

silicon tetrachloride. (tetrachlorosilane; silicon chloride). CAS: 10026-04-7. SiCl_4 .

Properties: Colorless, exceedingly mobile, fuming liquid; suffocating odor. Corrosive to most metals when water is present; in the absence of water, it has practically no action on iron, steel, or the common metals and alloys, and can be stored and handled in metal equipment without danger. D 1.483 (20C), bulk d 12.4 lb/gal, fp -70C, bp 57.6C, refr index 1.412 (20C). Miscible with carbon tetrachloride, tin tetrachloride, titanium tetrachloride, and sulfur mono- and dichlorides; decomposed by water and alcohol with evolution of hydrogen chloride. Non-combustible.

Derivation: Heating silicon dioxide and coke in a stream of chlorine.

Grade: Technical, 99.5%, CP (99.8%), semi-conductor.

Hazard: Toxic by ingestion and inhalation, strong irritant to tissue.

Use: Smoke screens; manufacture of ethyl silicate and similar compounds; production of silicones; manufacture of high-purity silica and fused silica glass; source of silicon, silica, and hydrogen chloride; lab reagent.

silicon tetrafluoride. (tetrafluorosilane; silicon fluoride). CAS: 7783-61-1. SiF_4 .

Properties: Colorless gas, suffocating odor similar to hydrogen chloride, fumes strongly in air, d 3.57 (gas, air = 1) (15C), fp -90C, bp -86C, absorbed readily in large quantities by water with decomposition, soluble in absolute alcohol. Non-combustible.

Derivation: (1) Action of hydrogen fluoride or concentrated sulfuric acid and a metallic fluoride on silica or silicates. (2) Direct synthesis.

Grade: Pure, 99.5% min.

Hazard: Toxic by inhalation, strong irritant to

mucous membranes. TLV (as F): 2.5 mg/m³ of air.

Use: Manufacture of fluosilicic acid, intermediate in manufacture of pure silicon, to seal water out of oil wells during drilling.

silicon tetrahydride. See silane.

silicon tetraiodide. SiI_4 .

Properties: White crystals, mp 120C, bp 290C.

Non-combustible.

Purity: Up to 99.999%.

Hazard: Toxic by ingestion and inhalation, irritant to tissue.

silicotungstic acid. (12-tungstosilicic acid; silicowolframic acid). CAS: 12027-38-2.

$\text{H}_4\text{SiW}_{12}\text{O}_{40} \cdot 5\text{H}_2\text{O}$.

Properties: White, crystalline powder. Very soluble in water and polar organic solvents, relatively insoluble in non-polar organic solvents, strong acid. Non-combustible.

Grade: Reagent, technical.

Use: Catalyst for organic synthesis, reagent for alkaloids, additive to plating processes, as precipitant and inorganic ion-exchanger, minerals separation, mordant.

See also sodium 12-tungstosilicate and tungstosilicates.

silicowolframic acid. See silicotungstic acid.

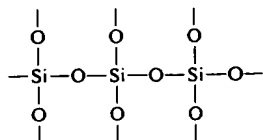
silk. A natural fiber secreted as a continuous filament by the silkworm, *Bombyx mori*; silk consists essentially of the protein fibroin and, in the raw state, is coated with a gum that is usually removed before spinning. D 1.25, elongation at rupture about 20%, tenacity 3-5 g/denier. Combustible but self-extinguishing.

sillimanite. An aluminum silicate, a high heat-resisting material containing a maximum amount of mullite, developed from the alteration of andalusite during firing. This necessitates firing at above 1550C for the development of a suitable crystalline structure.

Use: Spark plugs, chemical lab ware, pyrometer tubes, special porcelain shapes, furnace patches, and refractories.

silos. See ensilage.

siloxane. (oxosilane). A straight-chain compound (analogous to paraffin hydrocarbons) consisting of silicon atoms single-bonded to oxygen and so arranged that each silicon atom is linked with four oxygen atoms.



In some types, hydrogen may replace two or more of the oxygens. Disiloxane and trisiloxane are examples.
See also silicone.

"Siltemp" [*Ametek*]. TM for for a substantially pure fibrous silica for use in rocket and missile construction and for high-temperature insulation of motor components and similar applications.

Use: As a construction material it is used in laminate form impregnated and bonded with high-temperature resins.

"Sil-Trode" [*Ampco*]. TM for silicon bronze electrodes and filler rod for use in inert gas welding.

silumin. Aluminum-silicon alloys containing 12% silicon.
Properties: D 2.63-2.65.

silver. CAS: 7440-22-4. Ag. Metallic element, atomic number 47, group IB of the periodic table, aw 107.868, valence = 1, two stable isotopes.

Properties: Soft, ductile, lustrous, white solid; highest electrical and thermal conductivity of all metals. Excellent light reflector that resists oxidation, but tarnishes in air through reaction with atmospheric sulfur compounds. D 10.53, mp 961C, bp 2212C, thermal conductivity 1.01 cal/cm/sec/C, absorbs oxygen strongly at the melting point. Soluble in nitric acid, hot sulfuric acid, and alkali cyanide solutions; insoluble in water and alkalis. Non-combustible except as powder.

Derivation: By-product of operations on copper, zinc, lead, or gold ores, but some smelters still operate on native silver. The recovery ranges from 166 ounces to a few thousandths of an ounce per ton.

See Parkes process, the Pattinson process.

Source: Chief silver ores are native silver, argentite (silver sulfide), and cerargyrite (silver chloride).

Available forms: Pure ("fine"), sterling (7.5% copper), various alloys, plate; ingot, bullion, moss, sheet, wire, tubing, castings, powder, high purity (impurities less than 100 ppm), single crystals, whiskers.

Hazard: Toxic material. TLV (metal): 0.1 mg/m³ of air; (soluble compounds as silver): 0.01 mg/m³ of air.

Use: Manufacture of silver nitrate, silver bromide, photographic chemicals; lining vats and other equipment for chemical reaction vessels, water distillation, etc.; mirrors, electric conductors, such as bus bars; silver plating, electronic equipment; sterilant; water purification; surgical cements; hydration and oxidation catalyst; special batteries; solar cells; reflectors for solar towers; low-temperature brazing alloys; table cutlery; jewelry; dental, medical, and scientific equipment; electrical contacts; bearing metal; magnet windings; dental amalgams. Colloidal silver is used as a nucleating agent in photography and in medicine, often combined with protein.

See "Argyrol."

Note: A sandwich assembly consisting of a layer of silver between two layers of TiO₂ is used to coat the interior of light bulbs, it is said to reduce power consumption by more than 50% and triple the life of the bulb. Each layer of the coating, applied by the sputtering technique is 180 Å thick.

silver acetate. CAS: 563-63-3. CH₃COOAg.
Properties: White crystals or powder, d 3.26, moderately soluble in hot water, soluble in nitric acid.

Hazard: Toxic material. TLV: 0.01 mg/m³ of air.
Use: Lab reagent, oxidizing agent.

silver acetylide. CAS: 13092-75-6. Ag₂C₂.
Properties: White, unstable powder; a salt of acetylene.

Derivation: Reaction of acetylene with aqueous solution of argentous salts.

Hazard: Severe explosion risk when shocked or heated.

Use: Detonators.

silver bromate. AgBrO₃.

Properties: White powder, sensitive to light, keep in amber bottle, soluble in ammonium hydroxide, slightly soluble in hot water, decomposed by heat, d 5.2.

silver bromide. CAS: 7785-23-1. AgBr.

Properties: Pale yellow crystals or powder, darkens on exposure to light, finally turning black; d 6.473 (25C); mp 432C; bp decomposes at 700C; soluble in potassium bromide, potassium cyanide, and sodium thiosulfate solutions; very slightly soluble in ammonia water; insoluble in water; light-sensitive.

Derivation: Silver nitrate is dissolved in water and a solution of alkali bromide added slowly. The precipitated silver bromide is washed repeatedly with hot water; the operation must be carried on in a darkroom under a ruby-red light.

Use: Photographic film and plates, photochromic glass, laboratory reagent.